REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-16 were pending in the application. Claim 1 is amended to clarify that the group nodes of the isolated-superset node are not physically connected and nodes within the group nodes are not connected to nodes in the connected-superset node and to clarify that this lack of connectivity is shown in the display. Independent claim 12 is amended to clarify that the sets of nodes are chosen such that nodes within the sets are not physically connected to nodes within the other sets. These features of the invention allow the method to operate to group nodes by their connectivity and to show such connectivity and to concurrently show nodes that are not connected to each other and/or to the nodes of other connected groups. This feature is not shown in the art of record, which only shows connected (sometimes indirectly) elements in a single display.

No new matter is added by the amendments with support found at least in Figures 2-5B and at the corresponding portions of the specification. Claims 1-16 remain in this application for consideration by the Examiner.

Objections to the Drawings

In the June 17, 2003 Office Action, the drawings were objected to due to a number of informalities in numbering and for failing to number elements shown in the figures and/or described in the specification. Formal drawings were provided in Applicants' prior response of September 17, 2003.

In the January 12, 2004 Office Action, a drawing objection was maintained that requested the figures be amended to include an element numbered "428" as referenced in the specification. In the Applicants' prior response, the specification was amended by replacing the paragraphs beginning at page 8, line 29 and at page 9, line 11 to correct typographical errors, i.e., to replace mention of a group node "428" with the group nodes 420, 422, 424, and 426 shown in Figure 4A. It is believed that the previous amendments to the specification address the objection.

Rejections Under 35 U.S.C. § 103

In the June 17, 2003 Office Action, claims 1-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,067,093 ("Grau"). This rejection was traversed in Applicants' September 17, 2003 response, and claims 12-16 were added.

In the January 12, 2004 Office Action, claims 1-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,067,093 ("Grau"). This rejection is traversed based on the following remarks.

A feature of the invention that distinguishes the claimed methods from Grau is that the invention involves grouping nodes of a network based on physical connectivity and then, displaying the groups or sets of nodes in a manner that shows connectivity among nodes and groups of nodes and also, shows lack of connectivity among groups of nodes or individual nodes. Grau fails to teach that usefulness of showing isolated and unconnected nodes in a single display concurrently with showing physical interconnections that are maintained whether a group is expanded or contracted.

In the Response to Arguments of the January 12, 2004 Office Action, Grau is cited at Figure 11 with nodes that are "isolated" from each other for teaching such concurrent showing of connected nodes and groups of nodes and of isolated and unconnected groups. However, Grau in Figure 11 and elsewhere teaches illustrating nodes of a tree that are all connected – directly or indirectly. For example, the nodes of group 1140 are connected to the nodes of group 1110 and nodes of group 1140 through node or hub 1150. All nodes represented with darkened squares and groups shown by dashed lines are interconnected by solid lines, e.g., a line connects node 1142 to node 1150 and node 1150 to 1120, which in turn is connected to nodes through five branch lines or interconnections. There are no nodes shown in Figure 11 to be isolated and unconnected physically, and there certainly are no separate sets of connected nodes that are unconnected to the nodes of the tree 1100.

More specifically, claim 1 is directed to a method of displaying nodes within a network topology including "grouping the group nodes of the second layer into a third layer, the third layer having at least one connected-superset node containing group nodes with nodes connected to each other, and at least one isolated-superset node containing group nodes having nodes **not physically connected to each other or to the nodes of the connected-superset node**." Further, claim 1 calls for "displaying the superset nodes in the third layer so the connected-superset node is separate from the isolated-superset node **to show a lack of connection**." Grau fails to show a set of nodes in which the nodes are not physically connected to each other (within the set) or to other nodes in a connected set of nodes. Taken in its best light, Grau with Figure 11 teaches a set of group nodes (such as groups 1140, 1150,

1110, and 1140) that are all connected (see the solid lines between groups 1140, 1110, 1140 and 1150). However, each of the nodes within these groups is interconnected directly or indirectly (such as through hub nodes 1120 and 1142). Additionally, Grau does not show a set of nodes that unconnected within the set and are unconnected to other nodes of the connected set. Hence, Grau fails to teach or suggest this element of claim 1, and claim 1 and claims 2-9 that depend from claim 1 are believed allowable over Grau for at least this reason.

Similarly, independent claim 10 is directed to a method of displaying nodes within a network topology that includes "grouping the group nodes of the second layer into a third layer, the third layer having at least one connected-superset node containing group nodes connected to each other, but **not connected to any other nodes belonging to other connected-superset nodes**." As can be seen from this language, claim 10 calls for collecting group nodes within a connected-superset node in which all groups are connected and for excluding any nodes that are not connected, e.g., which will then be placed in a separate isolated-superset node (see claim 11) or in another connected-superset node that can be displayed concurrently in expanded or contracted form. Grau fails to teach the concept of placing connected nodes into a set and excluding any nodes that are not connected, and instead Grau teaches displaying connected nodes in tree form 1100. For at least this reason, claim 10 and dependent claim 11 are believed allowable over Grau.

Independent claim 12 is directed to a computer-based method for graphically displaying a network that includes "forming a third layer of the multilayer representation by grouping the group nodes into sets of nodes, wherein the sets of nodes are not physically connected" and then displaying the sets of nodes showing the interconnections. Grau fails to teach forming a multilayer representation in which a layer comprises two or more sets of nodes that are not physically connected. As discussed, Grau teaches in Figure 11 a set 1100 of nodes that are represented as three groups (i.e., one larger group 1110 (shown centralized intentionally as part of the invention that requires the higher connectivity group to be centrally located in the display) and two smaller groups 1140) that are physically connected via hub or node 1150. Claim 12 calls for displaying two or more sets of nodes that are not connected, and because Grau only shows a single connected set 1100 in Figure 11, Grau fails to anticipate or even suggest the method of claim 12. Hence, claim 12 and claims 13-16 that depend from claim 12 are believed in condition for allowance.

Another distinguishing feature of the invention relative to Grau is that the claimed methods call for groups and/or supersets to be selectively expandable and to maintain connections between the expanded and contracted groups and supersets. In the Response to Arguments portion of the January 12, 2004 Office Action, it is noted that Grau allows for selective display of maps within the overall display. However, this is inaccurate in that expanded maps are not shown on the original display but are shown in a new, separate display. See, for example, Grau at col. 7, line 55 to col. 8, line 11 for a discussion the use of page icons to provide links to differing pages of the atlas and the idea of scrolling on a page. In other words, the symbols used for contracted maps are links to other displays and when selected to selectively expand contracted groups of nodes. In contrast, see elements 240 of Applicants' Figure 2 that can be selected to selectively expand and contract group nodes in the same display with connections maintained. Further, it should be noted that in the Office Action of June 17, 2003 Grau was described as failing "to specifically disclose the connected-superset node is selectively expandable to display group nodes..."

More particularly, claim 1 calls for "displaying the superset nodes in the third layer" with each of the supersets being selectively expandable "to display group nodes of the second layer." Independent claim 10 calls for "displaying the connected-superset node in the third layer in a display such that the connected-superset node is selectively expandable to display group nodes and connections between the nodes in the display." Independent claim 12 has a displaying function that includes "wherein the group nodes in the second layer can be expanded to selectively display one or more of the plurality of nodes and the sets of nodes in the third layer can be expanded to selectively display one or more of the group nodes in the multilayer representation. Because Grau fails to teach the selective expansion of group nodes or superset node in a display, claims 1, 10, and 12 and dependent claims 2-9, 11, and 13-16 are not obvious in light of the teaching of Grau.

Many of the following remarks were provided in the prior response with reference to Grau and its lack of teaching the selective expansion of set of node and group nodes within a display but are provided again for the sake of completeness and to more clearly distinguish the pending claims from Grau.

The Office Action cites Grau at col. 4, lines 40-45, col. 5, lines 3-13, and col. 10, lines 50-56. Grau at the cited references teaches viewing configuration, state, and history

information for network components, viewing topology data and browsing the "atlas", and discusses how a "spanning tree 1100" is used to layout a network (not necessarily how the atlas-like topology is later displayed). None of these specific references teach the concept of displaying superset nodes that are selectively expandable to show group nodes and connections between the nodes in such supersets.

The basic concept of Grau is to model a network as if it were a number of pages of an atlas and on each page hub and spoke techniques are used as a basis for displaying the network (e.g., see col. 9, line 62 to col. 10, line 5). Figure 6 of Grau shows that cross-referenced pages of the atlas may be shown as icons 650, 650a. These are <u>not supersets that are selectively expanded</u> and are instead **links to other pages of the atlas that when selected call up the cross-referenced object**. See, also, col. 7, line 55 to col. 8, line 11 which discusses the use of page icons to provide links to differing pages of the atlas and the idea of scrolling on a page. Grau provides one technique for viewing a network topology but fails to suggest that it would be useful to model a network as a series of layers each with one or more groups of nodes or sets of groups of nodes. Further, there is no motivation provided in Grau itself to modify its teachings to provide for such groupings and modeling with multiple levels. Hence, claims 1, 10, and 12 are not obvious for this reason.

Claims 2-9 depend from claim 1 and are believed allowable for at least the reasons for allowing claim 1. Additionally, claim 5 calls for the group nodes in the connected-superset node to include switch groups and host groups. Grau is cited at col. 3, lines 44-47 for teaching this limitation, but at this point and elsewhere, Grau does not teach grouping into switch groups or host groups but instead merely mentions that switches, routers, hubs, and the like may be in a network and would be shown in the Grau displays (whereas a "switch group" would include the components connected to that switch). There is no similar grouping in Grau which instead teaches that items are "grouped near neighboring objects" (at col. 9, lines 66-67) with proximity being the key focus. Claim 8 calls for the isolated-superset node to include unmapped hubs and isolated switches. Grau only teaches displaying a linked network. No reference is provided in the Office Action for the elements of claim 8. For these additional reasons claims 5 and 8 are believed allowable over Grau.

Claim 12 is directed to a method for graphically displaying a network that includes forming first, second, and third layers. What is included in each layer is defined in claim 12,

with the first layer including components and interconnections of the network, the second layer including groups of the nodes in the first layer group into group nodes based on a "grouping criteria", and the third layer including sets of nodes formed by grouping one or more of the group nodes from the second layer. Displaying the formed multilayer representation is performed in the method of claim 12 with the group nodes of the second layer being expandable to display the nodes within that group and the sets of the third layer being expandable to display the group nodes of the second layer. Grau teaches arranging a network into an atlas with scrollable pages representing spanning trees but fails to teach forming a multilayer representation of a network with each layer containing the content called for in claim 12. Further, Grau, as noted in the Office Action, fails to teach the ability to selectively expand group nodes or sets of nodes and with this failure in mind, certainly, fails to teach the specific expansion technique called for in claim 12 (defining what is displayed upon such expansion). Hence, claim 12 is believed to be allowable over Grau.

Claims 13-16 depend from claim 12 and are believed allowable at least for the reasons for allowing claim 12. Further, claim 13 further defines the grouping criteria to be based on functional relationships. In contrast, Grau is directed to a very mathematical or geometrical technique for arranging nodes of a network based on physical proximity. Figures 12-16 and col. 10, line 46 to col. 12, line 67 of Grau are dedicated to explaining the formulas and techniques used to decide how to organize the networked or connected components into a displayable topology that can be scrolled within a page. There is no discussion in Grau that grouping of nodes could be based on functional relationships, such as all components using a switch being grouped into a switch group. Claim 14 further calls for the functional relationships to not require physical proximity in the network, which distinguishes the method of claim 14 further from Grau's teachings. Claim 15 calls for connections to continue to be shown when nodes are selectively expanded or collapsed, which is not shown by Grau. Claim 16 (as with claim 1) brings in the ideas of connected-superset nodes and isolated-superset nodes that are not shown or even suggested by Grau. For these additional reasons, claims 13-16 are allowable in view of Grau.

Conclusions

No fee is believed due with this response. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Kent Lembke, Reg. No. 44,866
Hogan & Hartson LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone: (720) 406-5378